

REMARKS

Claims 1-14 and 17-18 have been amended. No claims have been added. Claims 15-16 and 19-20 were canceled by prior amendment. Accordingly, claims 1-14 and 17-18 remain pending in the application.

Priority

Applicants respectfully request that the Examiner acknowledge the claim for priority and safe receipt of the priority document. The priority document (JP 2003-115181, having a filing date of April 21, 2003) was filed with the initial application on July 30, 2003.

35 U.S.C. §101

Claims 17 and 18 were rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. In response, claims 17 and 18 have been amended to recite that the program is stored on one or more storage mediums that are computer readable.

35 U.S.C. §112

Claims 1-14 and 17-18 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim

the subject matter of the invention. In response, these claims have been amended to remove the informalities and provide proper antecedent bases for all limitations.

35 U.S.C. §103

Claims 1, 2, 7-10, 17 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Iwatani et al (U.S. Pub. No. 20010054093 - hereafter "Iwatani") in view of Masahiro (JP 2002-278905 - hereafter "Masahiro").

It is noted that the Office Action contained no rejections on the merits of claims 3-6 and 11-14, leaving Applicant uncertain as to whether the subject matter of these claims is allowable or whether rejection of these claims on the merits was simply overlooked.

Further, it is noted that throughout the rejections under 35 U.S.C. §103(a), reference is made to "Fukuoka" as teaching elements of the claimed invention, when no reference by such an inventor or author is of record in the case. Applicants respectfully request that the Fukuoka reference be properly made of record in the next office action if the rejections of the claims is maintained.

In light of these shortcomings in the Office Action, and in the interests of advancing prosecution of the application, the rejections of the claims under 35 U.S.C. §103(a) are traversed as follows.

Discussion of the Invention

In one aspect, the present invention includes a management program and a management computer in a system with host computers and storage devices. The storage devices have an access control means for specifying which computers are permitted to access volumes on the storage devices. If a fault occurs in one of the volumes, notification of the fault and volume access control information regarding which computers are permitted to access the affected volume are sent by the storage system to the management computer. This enables fault information to be notified to only those host computers that are permitted to access the volume in which the fault has occurred.

Under an additional aspect, a connection device is included having a plurality of interfaces and a control unit. If a fault occurs in one of the volumes, passage access control information is also sent to the management computer so that fault information is only notified to those host computers that are permitted to access the volume in which the fault has occurred *and* that have a passage between the volume and the host computer.

Under a further aspect, managing person control information received by the management computer may also be a basis for delivery of volume fault information to particular computers.

Discussion of Iwatani

Iwatani is directed to a SAN management system including host computers, storage devices, switches, and an integrated management mechanism. It is asserted on page 5 of the Office Action that FIGS. 9-10 (S1) teach a management computer including an interface for receiving *a notice of a fault in the volume and said volume access control information from the plurality of storage devices*, as recited in claim 1. However, a review of FIGS. 9-10 and the corresponding text at paragraphs 119-132 show that Iwatani is discussing sending a problem report directed to a problem with (Fibre Channel Adapter) FCA 411 or the switch port connected to the FCA 411, and not a fault in a volume.

Further, taking into account the discussion of paragraphs 129-131 of Iwatani, which discuss the disposition of logical volumes affected by the problem with the FCA 411, it is apparent that Iwatani does not address reporting of a fault in a volume to computers permitted to access the volume. Rather, paragraph 131 clearly states that the affected host logical volumes are reported to the system administrator, and not to the relevant hosts, unlike the present invention set forth in claim 1. Thus, Iwatani merely teaches that reports of problems in the SAN fabric are forwarded to an integrated management mechanism. Accordingly, Iwatani does not teach that a fault of a volume is notified to the computers that are permitted to access the volume, as required by claim 1.

Furthermore, Iwatani fails to teach that volume access control information is forwarded to the management computer, as also recited in claim 1. Under the invention of claim 1, notification of a fault in a volume *and* volume access control information are received by the management computer from the storage devices. Iwatani does not teach or suggest that volume access control information is forwarded to a management computer. Accordingly, Iwatani does not teach or suggests this additional feature of the invention.

Discussion of Masahiro

As discussed in the specification of the present application, Masahiro teaches that, based on a list of access controls that have been placed in the storage system in advance, a fault of a volume is informed only to the host computer(s) which are able to access the volume in which the fault has occurred. (See, e.g., specification of the present application and English-language translation of Masahiro at paragraphs 10-11.) Under the teachings of Masahiro, the fault notification is sent from the control unit of the storage system to the computers which can access the volume affected by the fault.

This is entirely different from the present invention, as set forth in claim 1, wherein, the management computer receives a notice of a fault in one or more volumes, *and* volume access control information *from* the storage devices. Further, as also recited in Applicants' claim 1, the management computer notifies the fault to

the computers permitted to access the volumes *based on* the volume access control information. Thus, Masahiro does not teach or suggest the present invention as recited in claim 1.

Combination of Iwatani and Masahiro Does Not Teach or Suggest the Invention

Neither Iwatani, nor Masahiro show or suggest the invention set forth in claim 1, including a management computer receiving a notice of a fault in one or more volumes and volume access control information from said plurality of storage devices. Additionally, neither Iwatani, nor Masahiro teach a management computer notifying the fault in the one or more volumes to one or more authorized computers which are permitted to access the one or more volumes based on said volume access control information. Accordingly, since neither Iwatani nor Masahira teach these features, the combination of these two references also cannot teach these features. Further, none of the other art of record in the case teaches or suggests the invention set forth in claim 1, and thus, claim 1 is allowable.

With respect to claim 2, neither Iwatani, nor Masahiro teach or suggest a program for execution by a management computer that includes a procedure for receiving a notice of a fault in at least one volume from one or more storage devices and a procedure for receiving volume access control information from the one or more storage devices for specifying authorized computers from among a plurality of computers that are permitted to access the at least one volume. Nor do Iwatani and

Masahiro teach a procedure in a management program for notifying the fault to the authorized computers that are permitted to access the volume. Thus, claim 2 is also patentable over these references and the other art of record.

Further, with respect to claim 3, neither Iwatani, nor Masahiro teach that passage access control information is also used as a basis for notifying the fault in the volume to the authorized computers. Accordingly, claim 3 is allowable over these references and the other art of record.

Additionally, with respect to claim 4, neither Iwatani, nor Masahiro teach that managing person control information is also used as a basis for notifying the fault to the authorized computers. Accordingly, claim 4 is allowable over these references and the other art of record.

Furthermore, with respect to claims 5-7, none of Iwatani, Masahiro, or the other art of record teaches that volume access control information, the passage access control information, or the managing person control information are received from the plurality of computers, i.e., the hosts. Accordingly, these claims are also patentable over the art of record.

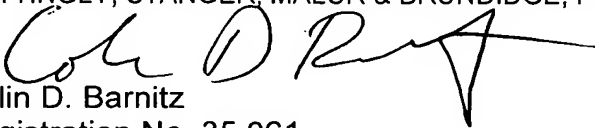
Claims 8-14 and 17-18 include limitations similar to those discussed above, and are allowable over the art of record for the same reasons.

Conclusion

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.


Colin D. Barnitz
Registration No. 35,061

1800 Diagonal Rd., Suite 370
Alexandria, Virginia 22314
(703) 684-1120
Date: December 14, 2005